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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,343	04/01/2004	Yoshiaki Sakagami	59406.00017	5345
32294 7590 07/13/2007 SQUIRE, SANDERS & DEMPSEY L.L.P. 14TH FLOOR 8000 TOWERS CRESCENT TYSONS CORNER, VA 22182			EXAMINER RICE, ELISA M	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/814,343

Applicant(s)

SAKAGAMI ET AL.

Examiner

Elisa M. Rice

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. This office action is responsive to applicant's amendments and remarks received on April 11, 2007. Claims 1-6 are currently pending.

***Priority***

2. The foreign priority claim filed March 31, 2003 was not entered because the foreign priority claim was not filed during the time period set forth under 35 U.S.C. 119 (a)-(d) or (f). Applicant may claim benefit of an earlier filing date of a foreign application under 35 U.S.C 119 (a)-(d) or (f) provided the application is filed within 12 months from the earliest date on which such foreign application was filed.

It is noted that applicant has not addressed the foreign priority matter advanced by the Examiner in paragraph 1 of the previous Office Action. Foreign priority continues to be denied.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, and 5 rejected under 35 U.S.C. 102(e) as being anticipated by Kuno (US 5,802,494).

**Regarding claim 1**, Kuno discloses an image transmission system for a mobile robot, comprising:

a camera for capturing an image as an image signal (Figure 2B, 31a and 31b, "video cameras").

a microphone for capturing sound as a sound signal ("The robot 5 has a video camera in its head, a microphone" , column 3, lines 40-41)

human detecting means for detecting a human from the captured sound ("and his or her speech is recognized by the speech recognition device built in the robot 5", Kuno, column 24, line 54). The robot in the Kuno patent has a built-in speech recognition

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system that recognizes the subject is human when speech recognition takes place. In other words, when speech recognition takes place, the robot can be assured of the humanness of the subject.

a power drive unit for moving the robot toward the detected human ("Another drive mechanism is incorporated in the trunk of the robot 5. When this mechanism is actuated, the robot 5 moves in any direction on the floor" , column 28, lines 27-29"; Upon receipt of the subject's approval.....automatically sends an aural, visual, or tactile messages to the subject, informing the subject that his or her image is about to be transmitted to the monitor section", column 25, line 44; "The robot 5 can move its arms and hands, touching the bed or the subject, thus giving a tactual message asking the subject if he or she agrees to be monitored.", column 24, line 6);

an image cut out means for cutting out an image of the detected human according to information from the camera; ("the image of the subject's head is extracted from the input image (Figure 11A)", column 9, lines 43-44) ; and

image transmitting means for transmitting the cut out human image to an external terminal ("and the signals showing the subject's image are transmitted to a CRT display installed in a monitor room", column 1, lines 60-62)

**Regarding claim 2**, Kuno discloses an image transmission system according to claim 1, wherein the system is adapted to detect a moving object from the image signal obtained from the camera, and determine that the object is a human from color information of the moving object (Figure 19B, i5 "Does the input image include an image of a moving object?"; "the pixels of skin color and hair color are extracted from the pixels of other colors", column 8, lines 20-22).

**Regarding claim 4**, Kuno discloses an image transmission system according to claim 1, further comprising means for monitoring state variables including a current position of the robot; the image transmitting means transmitting the monitored state variables in addition to the cut out human image (FIG. 28 is a diagram illustrating how to determine the position of the robot, column 3, lines 16-17, "The physician looks at the subject's face being displayed on the display of the monitor console and also checks the physical conditions being displayed on the other displays of the console, in order to decide what he or she should do for the subject.", column 5, lines 26-30, "the circuit 40 starts transmitting the image data representing the image of the subject, to the monitor section 2", column 5, lines 14-16, "Meanwhile, the electronics sensors 33 installed in the sickroom, such as the hemodynamometer and the electrocardiograph, both attached to the subject, output diagnosis signals, representing the physical conditions of the subject. The video signals and the diagnosis signals are input to the signal processor 32 incorporated in the data-processing/control section 4. The processor 32 processes these input signals, thereby generating image data and diagnosis data. The image data

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and the diagnosis data are supplied to the abnormality decision circuit 34 incorporated in the robot 5.", column 5, lines 10-20)

**Regarding claim 5**, Kuno discloses an image transmission system according to claim 1, wherein the system is adapted to have the robot direct the camera toward the position of the detected human ("Since the video camera 31a built in the robot 5 is directed to only the subject on the bed", column 7, lines 30-31).

### ***Claim Rejections - 35 USC § 103***

#### **Claims 1, 2, 5, and 6**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. **Claims 1, 2, 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Higaki et. al. (US 2004/0028260 A1) and Kuno (5,802,494).

**In Regards to Claim 1:**

Higaki discloses an image transmission system for a mobile robot, comprising:

a camera for capturing an image as an image signal ("employing 2-color CCDs, with L and R denoting the left side camera and the right side camera respectively", paragraph 41; Figure 1, 1L and 1R).

a microphone for capturing sound as a sound signal ("reference symbol 21 denotes a microphone that picks up the voice of a person speaking", paragraph 41; Figure 1, 21)

human detecting means for detecting a human from the captured sound ("voice recognition section which recognizes the content of the utterance picked up by the microphone", paragraph 41).

a power drive unit for moving the robot toward the detected human ("a drive control section", paragraph 41; Figure 1, numeral 9);

an image cut out means for cutting out an image of the detected human according to information from the camera ("reference symbol 54 denotes an outline extraction section which extracts an outline"; Figure 1, 54) ; and

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Higaki does not disclose an image transmitting means for transmitting a human image to an external terminal.

However, Kuno (5,802,494) does disclose an image transmitting means for transmitting a human image to an external terminal ("and the signals showing the subject's image are transmitted to a CRT display installed in a monitor room", column 1, lines 60-62, "the image of the subject's head is extracted from the input image (Figure 11A)", column 9, lines 43-44)

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki with an image transmitting means for transmitting a human image to an external terminal taught by Kuno in order to monitor an individual from a remote location and thereby increase the chance of finding a lost child. ("The CRT display displays the image of the subject, whereby a physician in the monitor room can observe the subject", column 1, lines 22-24)

#### **In Regards to Claim 2:**

Higaki teaches an image transmission system according to claim 1, wherein the system is adapted to detect a moving object from the image signal obtained from the camera ("a moving object ID at 116", paragraph 87 and determine that the object is a human from color information of the moving object ("make an area inside the outline having a

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predetermined color a candidate for a hand of a person", paragraph 17, "denotes a face recognition section which recognizes a person's face from the color image, the skin-color area image", paragraph 19)

**In Regards to Claim 5:**

Higaki discloses an image transmission system according to claim 1, wherein the system is adapted to have the robot direct the camera toward the position of the detected human ("obtains the pan angle and tilt angle of the cameras 1L and 1R (step S81). The line of sight instruction section sends the obtained pan angle and the tilt angle to the action control section 9 (step S82). As a result, the cameras 1L and 1R always come to face the direction of the head of the person who issues the instruction "come", it becomes possible to track the person", paragraph 94)

**In Regards to Claim 6:**

Higaki discloses an image transmission system according to claim 1, wherein the system further comprises means for measuring a distance to the detected human according to the information from the camera, and providing a target of a movement to said mobile robot ("a distance calculation device that calculates a distance to the body being the candidate, from distance information of each pixel within the outline in the image", paragraph 12 and "the movement instruction section 64, based on the moving object data 90, tracks the person who instructed "come" (step S95)", paragraph 95).

**Claim 3**

6. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Higaki et. al. (US 2004/0028260 A1) and Kuno (5,802,494) as applied to claim 1 above, and further in view of Shinichi (2000-326274).

**In Regards to Claim 3:**

While the Higaki and Kuno combination discloses a microphone as described above, the Higaki and Kuno combination does not teach determining a direction of a sound source from the sound signal obtained from the microphone.

However, Shinichi does teach a system, in the same problem solving area of locating a source of sound that detects the direction of a sound source ("direction of a sound source is detected", paragraph 5).

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki and Kuno in the claim 1 discussion above with a system as taught by Shinichi that is adapted to determine a direction of a sound source from the sound signal obtained from the microphone because this directional information provided by the sound signal allows the robot an additional way to be able to locate the person ("turned the robot in this direction" paragraph 5 of Shinichi and "person retrieval processing" paragraph 5 of Shinichi).

**Claim 4**

7. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Higaki et. al. (US 2004/0028260 A1) and Kuno (5,467,403) as applied to claim 1 above, and further in view of Ishii (6,278,904).

**In Regards to Claim 4:**

Higaki, as part of the Higaki and Kuno combination applied to claim 1 above, teaches means for monitoring state variables ("the person information map 10 defines the relative position between the person and the autonomous relative position between the person and the autonomous robot R, in order to grasp where the person issuing instructions currently is. The person information map 110 includes: an individual person ID 111 for uniquely specifying persons, a relative position to self 112, a face object ID 113, and individual person ID 114, a posture ID 115, a moving object ID 116, a face position coordinate 118 in the real space, a hand position coordinate 119, a distance to self 120, a relative angle to self 121, an outline contact point coordinate 122, and a head vertex point coordinate 123", paragraph 87, "the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15", paragraph 88 and "the operation for renewing the person information map in the object integration section 62 is described with reference to Figure 15", paragraph 88).

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Higaki does not disclose an image transmitting means transmitting the monitored state variable including current position of the robot.

Ishii does disclose an image transmitting means transmitting the monitored state variables including the current position of the robot ("In the first embodiment, the information captured through the image sensor 11 and the audio sensor 12 is used for the purpose of detecting a current position of the robot 10 in order for the robot 10 to move around all objects to be monitored or to monitor a specified object. The information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally through the communications device 19 and stored in an external device, as the monitoring data", column 5, lines 10-15).

It would have been obvious at the time of the invention to a person of ordinary skill in the art to combine the image transmission system for a mobile robot with the elements as disclosed by Higaki and Kuno in the claim 1 discussion above with an image transmitting means transmitting the monitored state variables including current position of the robot as taught by Ishii, in order to be able to observe a predetermined object and keep track of its location and other state variables of interest ("detecting a current position of the robot 10 in order for the robot to move around all objects to be monitored or to monitor a specified object" and "the information captured through the image sensor 11 and the audio sensor 12 is also stored in the robot 10, or transferred externally

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through the communications device 19 and stored in an external device, as the monitoring data", Ishii, column 5, lines 10-15).

### ***Response to Arguments***

Summary of Applicant's Remarks: The Kuno patent fails to disclose a "human detecting means for detecting a human from the captured sound" at response page 6, top paragraph.

Examiner's Response: The following excerpt is provided from the Kuno patent in column 24, starting at line 54: "and his or speech is recognized by the speech recognition device built in the robot 5, whereby the subjects approval or disapproval is conveyed to the physician". By "approval" and "disapproval", the subject provides permission for being monitored. Thus, the robot in the Kuno patent has a built-in speech recognition system that recognizes the subject is human when speech recognition takes place. In other words, when speech recognition takes place, the robot can be assured of the humanness of the subject.

Summary of Applicant's Remarks: The Kuno patent fails to disclose providing "a power drive unit for moving the robot toward the detected human" at response page 6, top paragraph.

Examiner's Response: The following excerpt is provided from the Kuno patent in column 28 starting at line 28: "Another drive mechanism is incorporated in the trunk of the robot 5. When this mechanism is actuated, the robot 5 moves in any direction on the floor. The drive mechanisms incorporated in the robot 5 are remote-controlled by operating the monitor console of the monitor section 2. Thus, under the control of the monitor section 2, the robot 5 is moved to a desired position with respect to the subject, and its head is turned, bent and vertically moved until its nose (i.e., the zoom-lens cylinder) is directed to the subject's face."

Thus, the robot of Kuno has a power drive unit that is responsible for moving the robot. Referring to the aforementioned speech recognition of Kuno, Once the robot has recognized aural "approval," the robot then uses the power drive unit to move its hand towards the patient ("Upon receipt of the subject's approval.....automatically sends an aural, visual, or tactile messages to the subject, informing the subject that his or her image is about to be transmitted to the monitor section", column 25, line 44; "The robot 5 can move its arms and hands, touching the bed or the subject, thus giving a tactual message asking the subject if he or she agrees to be monitored.", column 24, line 6) to communicate to the patient that his or her image will now be transmitted to the physician in the console room.

Summary of Applicant's Remarks: Kuno patent fails to disclose "an image cut out means for cutting out an image of the detected human according to information from the camera" at response page 6, second paragraph.

Examiner's Response: the following excerpt is provided from the Kuno patent in column 9, lines 43 to 44: "the image of the subject's head is extracted from the input image (Figure 11A)."

More specifically, the Kuno patent recites the following means of extraction in column 9 starting at line 21: "The pixels extracted from the input image shown in FIG. 11A and defining the image shown in FIG. 11B are labeled in step c2. Then, in step c3, the video signals representing the labeled pixels are processed, whereby data items are obtained which define rectangles. Each of these rectangles circumscribes a groups of the labeled pixels which are close to one another. Of these rectangles, those which are so small to be regarded as resulting from noise, and those which are long enough to be regarded as representing a crease of the bedding are deleted from the image, thereby forming the image shown in FIG. 11C. Then, in step c4, data is obtained which represents a rectangle circumscribing the rectangles shown in FIG. 11C, as is illustrated in FIG. 11D. In step c5, it is determined whether or not the rectangle is large enough to represent the subject's head. If YES, the rectangle is considered to represent the

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subject's head. If NO, the rectangular area is expanded so that it can be understood to represent the subject's head. Thus, the image of the subject's head is extracted from the input image (FIG. 11A)."

Summary of Applicant's Remarks: Kuno patent fails to disclose a robot that approaches "the subject to face him and take a picture" at response page 6, penultimate paragraph.

Examiner's Response: The following excerpt is provided from the Kuno patent in column 28, line 33: "Thus, under the control of the monitor section 2, the robot 5 is moved to a desired position with respect to the subject, and its head is turned, bent and vertically moved until its nose (i.e., the zoom-lens cylinder) is directed to the subject's face."

Summary of Applicant's Remarks: Applicant claims that "Higaki is not a proper reference in these rejections, because it barred by 35 U.S.C. 103(c). Higaki is available as a reference only under 35 U.S.C. 102(e), if at all. Higaki has filing date of August 3, 2003 and published on February 12, 2004. In contrast, the present application was filed April 1, 2004" at response page 7, bottom paragraph.

Examiner's Response: "35 U.S.C. 103(c), as amended by the CREATE Act, applies only to subject matter which qualifies as prior art under 35 U.S.C. 102(e), (f), or (g), and which is being relied upon in a rejection under 35 U.S.C. 103.", MPEP 2146. Higaki is

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prior art under 102(a). Higaki was published on February 12, 2004, which is before applicant's filing date of April 1, 2004. Therefore, Higaki is not barred under 103(c).

Summary of Applicant's Remarks: Applicant states that claim 3 is not taught by the combination of Higaki, Kuno and Shinichi because "Higaki may not be used as prior art against the present application" at response page 9, third paragraph.

Examiner's Response: However, for the same reason set forth directly above, Higaki is not barred under 103 (c) and therefore, this argument is moot.

Summary of Applicant's Remarks: Applicant claims that Shinichi does not teach a "human detecting means for detecting a human from the captured sound" and a "power drive unit for moving the robot toward the detected human" at response page 10, second paragraph.

Examiner's Response: Examiner's rejection of claim 3 does not rely on Shinichi teaching either the "human detecting means for detecting a human from the captured sound" or the "power drive unit for moving the robot toward the detected human." These features are taught by the Kuno patent as discussed above.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elisa M. Rice whose telephone number is (571)270-1580. The examiner can normally be reached on 8:00a.m.-5:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571)272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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